

Awareness and Attitude Towards Climate Change and Its Effects on Health Among Secondary Level Students in Selected Schools of Pokhara

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Abstract

Introduction: Climate change poses a growing threat to human health worldwide, with consequences that no single nation can address in isolation. Rising temperatures, more frequent extreme weather, worsening air quality, and shifting patterns of infectious disease are placing increasing strain on public health systems, economies, and social stability. Building climate change awareness and cultivating positive attitudes toward it among young people is a key step toward environmentally responsible behavior and stronger public health outcomes. This study set out to measure how much secondary-level students at SainikAwasiya Mahavidyalaya, Pokhara understand about climate change and its health impacts, and how they feel about it.

Method: A total of 189 students from grades 9 and 10 at the school took part in this cross-sectional survey, selected through a multistage sampling process. Parents provided written consent before their children completed a self-administered structured questionnaire covering both knowledge and attitude items. The resulting data were coded and analyzed using descriptive and inferential statistics.

Results: Just over 60% of students demonstrated adequate awareness, but only about 45.5% expressed a positive attitude toward climate change and its health impact. Age and educational level were both significantly associated with awareness level ($p < 0.001$), while no significant relationship emerged for gender, residence, subject preference, or mobile phone access.

Conclusion: Knowing more about climate change did not reliably translate into feeling positively about it for most students in this sample fewer than half held favorable views despite comparatively strong baseline knowledge. Since awareness tracked closely with age and grade, interventions timed to specific school years may be more effective than generic, one-size-fits-all programming.

Keywords: Attitude, Awareness, Climate change, Secondary level students

Introduction

Climate change has become one of the defining forces shaping this century, touching everything from ecosystem stability to human health outcomes.¹ While the climate has always shifted through natural forces like solar cycles and volcanic eruptions, what sets the current era apart is the scale of human contribution — fossil fuel combustion, deforestation, and industrial growth have pushed greenhouse gas concentrations to levels driving measurable warming, altered rainfall, glacier loss, sea-level rise, and more frequent severe weather.^{2,3}

These environmental shifts translate into health risks through

two distinct channels. Some effects are immediate injury and death tied directly to floods, heatwaves, and drought. Others unfold more gradually: shifting disease vectors, contaminated water supplies, food insecurity, respiratory strain, and mental health burdens all trace back to a warming climate.^{4,5} The WHO has named this among the defining health threats of the coming decades, projecting a rising toll of illness and death tied to it.⁶

Nepal sits particularly exposed to these dynamics. Its mountainous terrain, dependence on climate-sensitive industries, and geographic vulnerability combine to make it one of the more fragile places globally in this regard.⁶ Warming

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trends within the country have outpaced global averages, intensifying landslide, flood, and drought risk, along with threats from glacial lake outbursts.⁷ There's a real inequity here — Nepal emits a small fraction of global greenhouse gases yet absorbs an outsized share of the consequences, with knock-on effects for health systems, livelihoods, and development trajectories.^{8,9} Its ranking of 128th among 181 countries on the Notre Dame adaptation index reflects just how constrained its capacity to respond currently is.¹⁰

Adolescents matter disproportionately in this picture. What they learn and internalize now about environmental responsibility tends to persist into adulthood, shaping long-term behavior patterns.¹¹ Students with a solid grasp of climate issues are also positioned to influence their households and communities — meaning investment in their understanding pays dividends beyond the individual.¹²

Research from countries including Ethiopia, India, Bangladesh, Nigeria, and Nepal shows considerable variation in how much students know and how they feel about climate change, with factors like age, gender, schooling level, and where they live producing inconsistent patterns across settings. Some cohorts show strong knowledge paired with favorable attitudes; others reveal real gaps in understanding health-specific risks.^{13, 14, 15, 16, 17}

Nepal-specific research on this question, however, remains thin particularly for secondary students. Most existing work has centered on university populations or broader environmental literacy rather than health-specific knowledge, leaving a gap in understanding how younger students in this setting relate to the issue and what factors shape that relationship.

Addressing that gap is the aim of this research: to determine what secondary students know about climate-related health risks, how favorably they view the issue, and how these outcomes connect to their background with the hope that findings here can guide more targeted educational programming going forward.

Methods

Between 2081/06/07 and 2081/06/14 data were gathered from 189 students in grades 9 and 10 at Sainik Awasiya Mahavidyalaya, Pokhara.

Determining how many students to include started with a population of 300, applying the standard formula for calculating sample size from a known population (Yamane, precision level set at 0.05):

$$n = N / (1 + Ne^2)$$

Working through the calculation: 300 divided by (1 + 300 × 0.0025) equals 300/1.75, or approximately 172 students.

Anticipating some non-response, 17 additional students (10%) were added, bringing the total to 189.

The participants were selected through a multistage sampling procedure. First, the study was conducted in the selected school. Next, all eligible students were grouped according to their grade level (Grade 9 and Grade 10). The total sample size was then distributed to each grade in proportion to the number of enrolled students. Finally, a simple random sampling method was applied within each grade to identify the required participants. In total, 189 students were included in the study, comprising 95 students from Grade 9 and 94 students from

Grade 10.

Before data collection began, the Institutional Review Committee at Manipal College of Medical Sciences reviewed and approved the study, and the school administration granted permission as well. Parents received an explanation of the study's purpose and gave written consent; only then were students themselves asked for assent. No student was included without voluntarily agreeing to take part after this process.

The two outcomes of interest how much students knew and how they felt about climate change's health effects were measured against several background characteristics: age, gender, where they lived, grade level, subject preference, and whether they had mobile phone access. A three-part questionnaire captured all of this: demographic details in Part I, 34 knowledge items in Part II, and a four-point scale (from strong disagreement to strong agreement) measuring attitude in Part III.

Scoring worked as follows: correct responses on Part II were converted to a percentage, with scores above 87% counted as "good" knowledge and everything at or below that threshold as "poor." Attitude scores at or above the sample mean were labeled positive; below-mean scores were labeled negative. Before fieldwork began, the instrument's content was checked against relevant literature and reviewed by peers to confirm it measured what it intended to. A reliability check using Cronbach's alpha returned a value of 0.80, suggesting the items held together consistently.

Once collected, questionnaires went through coding and entry into SPSS (version 23). Frequencies, percentages, means, and standard deviations summarized the sample, while chi-square tests examined whether awareness varied meaningfully by background characteristics. A threshold of 0.05 determined statistical significance throughout.

Results

Of the 189 participants, roughly two-thirds (69.3%) were older than 14, with the remaining 30.7% at or below that age. Males made up 68.3% of the sample and females 31.7%. Urban residents accounted for the large majority (77.8%), against 22.2% from rural areas, and the Grade 9/Grade 10 split was nearly even (50.3% vs. 49.7%).

Mothers' education levels was biased toward basic schooling (64.6%), with smaller shares having completed secondary (8.5%) or higher secondary (22.8%) education, and a small minority (4.2%) with no formal schooling. Slightly more students preferred mathematics (60.3%) over environmental science (39.7%) as a subject. Mobile phone access was widespread, reported by 78.3% of the participants. (Table 1).

The preferred subject for most students, and the majority had access to mobile phones (78.3%). (Table 1)

Table 1: Socio-Demographic Characteristics of Respondents n=189

Characteristics	Frequency	Percentage(%)
Age in years		
Less than or equal to 14	58	30.7
More than 14	131	69.3
Mean±SD(14.85±0.736)		
Gender		
Male	129	68.3
Female	60	31.7
Area of residence		
Urban	147	77.8
Rural	42	22.2
Educational level		
Grade 9	95	50.3
Grade 10	94	49.7
Educational level of mother		
Illiterate	8	4.2
Basic level	122	64.6
Secondary level	16	8.5
Higher Secondary level	43	22.8
Subject Preference		
Optional Math	114	60.3
Environmental Science	75	39.7
Mobile phone access		
Yes	148	78.3
No	41	21.7

Awareness on Climate Change and its Health Effects.

Overall 60.3% of the participants had a good level of awareness, whereas 39.7% demonstrated poor level of awareness regarding climate change and its effect on health. (Table 2)

Table 2: Level of Awareness on Climate Change and its Effect on Health

n=189

Level of awareness	Frequency	Percentage(%)
Adequate	114	60.3
Inadequate	75	39.7
Total	189	100.0

Attitude on Climate Change and its Effect on Health

Regarding attitude 45.5% of the students showed a positive attitude while 54.5% had a negative attitude towards climate change and its effect on health. (table 3)

Table 3: Level of Attitude on Climate Change and its Effect on Health n=189

Level of attitude	Frequency	Percentage (%)
Positive	86	45.5
Negative	103	54.5
Total	189	100.0

Association between Awareness on Climate Change and its Effect on Health

Age and grade level both showed statistically significant links to awareness ($p < 0.001$ for each). None of the remaining variables tested — gender, residence, subject choice, or phone access reached statistical significance (Table 4)

Table 4: Association between Awareness on Climate Change and its Effect on Health and selected variables n=189

Variables	Good	Poor	χ^2 value	p value
Age				
≤14	20	38	23.31	<0.001
>14	94	37		
Gender				
Male	78	51	0.00	>0.05
Female	36	24		
Area of residence				
Urban	88	59	0.02	>0.05
Rural	26	16		
Educational Level				
Grade 9	38	57	33.21	<0.001
Grade 10	76	18		
Subject Preference				
Optional Math	47	28	0.28	>0.05
Environmental Science	67	47		
Mobile Phone Access				
Yes	88	60	0.21	>0.05
No	26	15		

Discussion

This study looked at how much students know about climate change and its health effects, and how they feel about it, among secondary level students at Sainik Awasiya Mahavidyalaya, Pokhara. The results showed that 60.3% of the students had good knowledge of climate change and its impact on health, but only 45.5% had a positive attitude. This shows that even though students knew a lot, having good knowledge did not always lead to a positive attitude.

This study found that 60.3% of students had good knowledge about climate change. This result is similar to a study done among university students in Bangladesh, where 73% of participants had good knowledge about climate change.¹⁵ Likewise, a study among health science students in Ethiopia found that 77.5% of students had good knowledge about how climate change affects health.¹² This similarity may be because more information about climate change is now available, along with more education and growing awareness of climate-related health and environmental topics among students.

In contrast, the present study's result was higher than a study done among secondary school students in Biratnagar, Nepal, where only 10% of students had enough knowledge about climate change and how it affects human health.¹⁶ Likewise, a study done in Malaysia found that 41.22% of respondents had average knowledge about the effects of climate change,

which is lower than in this study.¹⁷ These differences may be due to differences in the group studied, education level, study location, access to climate change education, and exposure to climate-related information.

Regarding attitude, 45.5% of students in this study had a positive attitude toward climate change and its effect on health. This matches studies done in India and Southwestern Nigeria, which found that 52% and 50% of participants, respectively, had a positive attitude toward climate change and its effect on health.^{13,15} However, a much higher number (84%) of participants had a positive attitude in a study done in Bangladesh.¹⁵ These differences in attitude may be due to differences in education, awareness programs, course content, characteristics of the students studied, and how much personal experience they had with climate-related events. Also, differences in family income level and access to climate change information may affect how students think and feel about climate change and its effect on health.

This study found a significant link between students' knowledge of climate change and some background factors. Age and grade level were significantly linked to knowledge level ($p < 0.001$). This suggests that being older and having more schooling may help students understand climate change and its health effects better. However, there was no significant link between knowledge and gender, where students lived, subject preference, or mobile phone access ($p > 0.05$). Similar results were found in a study of health science students in Ethiopia, where getting climate change information from school and the media was strongly linked to their knowledge about climate change and its health effects ($p < 0.05$).¹²

This study gives useful information about students' knowledge and feelings about climate change and its health effects in Nepal. The structured questionnaire helped measure knowledge and attitudes in a standard way and showed the gap between what students know and how positively they feel. However, because this was a one-time study, it cannot prove cause and effect, and since students reported their own answers, there is a chance of bias. Also, the study was done in only one school, so the results may not apply to all students.

Conclusions

The overall findings show that most respondents (60.3%) had adequate awareness of climate change and its effects on health, while more than half of the students (54.5%) exhibited a negative attitude. There was significant association between the level of awareness with age and educational level ($p < 0.001$). However, there was no significant association with gender, area of residence, subject preference and mobile phone access. This indicates a gap between knowledge and attitude, highlighting the need to enhance not only awareness but also promote positive behavioural change.

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